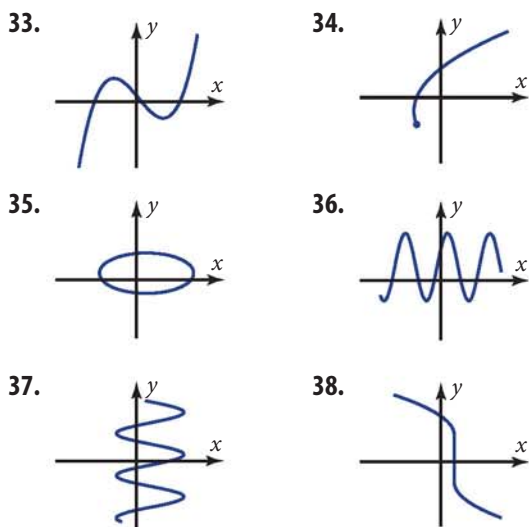


For Problems 29–32,

- Sketch a reasonable graph showing how the variables are related.
 - Identify the type of function it could be (quadratic, power, exponential, and so on).
- The weight and length of a dog.
 - The temperature of a cup of coffee and the time since the coffee was poured.
 - The purchase price of a house in a particular neighborhood as a function of the number of square feet of floor space in the house, including a fixed amount for the lot on which the house was built.
 - The height of a punted football as a function of the number of seconds since it was kicked.

For Problems 33–38, tell whether the relation graphed is a function. Explain how you made your decision.



- Vertical Line Test Problem:** There is a graphical way to tell whether a relation is a function. It is called the **vertical line test**.

PROPERTY: The Vertical Line Test

If any vertical line cuts the graph of a relation in more than one place, then the relation is not a function.

Figure 1-2m illustrates the test.

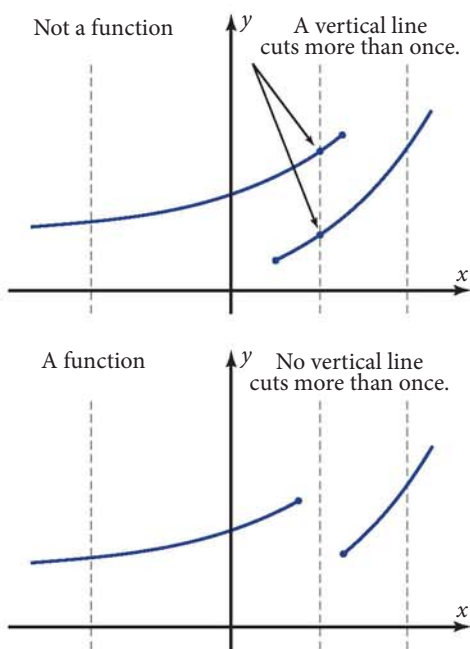



Figure 1-2m

- Based on the definition of function, explain how the vertical line test distinguishes between relations that are functions and relations that are not functions.
 - Sketch the graphs in Problems 33 and 35. On your sketch, show how the vertical line test tells you that the relation in Problem 33 is a function but the relation in Problem 35 is not.
- Explain why a function can have more than one x -intercept but only one y -intercept.
 - What is the argument of the function $y = f(x - 2)$?
 -  **Research Problem:** Look up George Boole on the Internet or in another reference source. Describe several of Boole's accomplishments that you discover. Include your source.